

FORM PTO-1390 (Modified)  
(REV 11-98)

U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE

ATTORNEY'S DOCKET NUMBER

## TRANSMITTAL LETTER TO THE UNITED STATES

TPP 31386

DESIGNATED/ELECTED OFFICE (DO/EO/US)

U.S. APPLICATION NO. (IF KNOWN, SEE 37 CFR

CONCERNING A FILING UNDER 35 U.S.C. 371

New Application 09/806941

INTERNATIONAL APPLICATION NO.

INTERNATIONAL FILING DATE

PRIORITY DATE CLAIMED

PCT/SE99/01701

27 Sept. 99 (27.09.99)

6 Oct. 98 (06.10.98)

## TITLE OF INVENTION

FLOORING MATERIAL COMPRISING BOARD SHAPED FLOOR ELEMENTS WHICH ARE JOINED  
VERTICALLY BY MEANS OF SEPARATE ASSEMBLY PROFILES

APPLICANT(S) FOR DO/EO/US

OLOFSSON, Ola

MARTENSSON, Goran

Applicant herewith submits to the United States Designated/Elected Office (DO/EO/US) the following items and other information:

1. ☒ This is a **FIRST** submission of items concerning a filing under 35 U.S.C. 371.
2. ☐ This is a **SECOND** or **SUBSEQUENT** submission of items concerning a filing under 35 U.S.C. 371.
3. ☒ This is an express request to begin national examination procedures (35 U.S.C. 371(f)) at any time rather than delay examination until the expiration of the applicable time limit set in 35 U.S.C. 371(b) and PCT Articles 22 and 39(1).
4. ☒ A proper Demand for International Preliminary Examination was made by the 19th month from the earliest claimed priority date.
5. ☒ A copy of the International Application as filed (35 U.S.C. 371 (c) (2))
  - a. ☐ is transmitted herewith (required only if not transmitted by the International Bureau).
  - b. ☒ has been transmitted by the International Bureau.
  - c. ☐ is not required, as the application was filed in the United States Receiving Office (RO/US).
6. ☐ A translation of the International Application into English (35 U.S.C. 371(c)(2)).
7. ☒ A copy of the International Search Report (PCT/ISA/210).
8. ☒ Amendments to the claims of the International Application under PCT Article 19 (35 U.S.C. 371 (c)(3))
  - a. ☐ are transmitted herewith (required only if not transmitted by the International Bureau).
  - b. ☐ have been transmitted by the International Bureau.
  - c. ☐ have not been made; however, the time limit for making such amendments has NOT expired.
  - d. ☒ have not been made and will not be made.
9. ☐ A translation of the amendments to the claims under PCT Article 19 (35 U.S.C. 371(c)(3)).
10. ☐ An oath or declaration of the inventor(s) (35 U.S.C. 371 (c)(4)).
11. ☒ A copy of the International Preliminary Examination Report (PCT/IPEA/409).
12. ☐ A translation of the annexes to the International Preliminary Examination Report under PCT Article 36 (35 U.S.C. 371 (c)(5)).

## Items 13 to 20 below concern document(s) or information included:

13. ☒ An Information Disclosure Statement under 37 CFR 1.97 and 1.98.
14. ☐ An assignment document for recording. A separate cover sheet in compliance with 37 CFR 3.28 and 3.31 is included.
15. ☒ A **FIRST** preliminary amendment.
16. ☐ A **SECOND** or **SUBSEQUENT** preliminary amendment.
17. ☐ A substitute specification.
18. ☐ A change of power of attorney and/or address letter.
19. ☐ Certificate of Mailing by Express Mail
20. ☒ Other items or information:

(a) Copy of International Application as Published (WO 00/20706)

(b) PCT/IPEA/402

(c) PCT/IPEA/409

(d) PCT/IB/304

(e) PCT/RO/101

(f) PCT/ISA/210

(g) PTO-1449 with 5 references

U.S. APPLICATION NO. (UNKNOWN, SEE 37 CFR 1.53) <b>New Application</b>	INTERNATIONAL APPLICATION NO. <b>PCT/SE99/01701</b>	ATTORNEY'S DOCKET NUMBER <b>TPP 31386</b>
---	--	--

21. The following fees are submitted:				<b>CALCULATIONS PTO USE ONLY</b>	
<b>BASIC NATIONAL FEE (37 CFR 1.492 (a) (1) - (5)) :</b>					
<input checked="" type="checkbox"/> Neither international preliminary examination fee (37 CFR 1.482) nor international search fee (37 CFR 1.445(a)(2)) paid to USPTO and International Search Report not prepared by the EPO or JPO .....				\$1,000.00	
<input type="checkbox"/> International preliminary examination fee (37 CFR 1.482) not paid to USPTO but International Search Report prepared by the EPO or JPO .....				\$860.00	
<input type="checkbox"/> International preliminary examination fee (37 CFR 1.482) not paid to USPTO but international search fee (37 CFR 1.445(a)(2)) paid to USPTO .....				\$710.00	
<input type="checkbox"/> International preliminary examination fee paid to USPTO (37 CFR 1.482) but all claims did not satisfy provisions of PCT Article 33(1)-(4) .....				\$690.00	
<input type="checkbox"/> International preliminary examination fee paid to USPTO (37 CFR 1.482) and all claims satisfied provisions of PCT Article 33(1)-(4) .....				\$100.00	
<b>ENTER APPROPRIATE BASIC FEE AMOUNT =</b>				<b>\$1,000.00</b>	
Surcharge of \$130.00 for furnishing the oath or declaration later than <input type="checkbox"/> 20 <input checked="" type="checkbox"/> 30 months from the earliest claimed priority date (37 CFR 1.492 (e)).				<b>\$130.00</b>	
<b>CLAIMS</b>	<b>NUMBER FILED</b>	<b>NUMBER EXTRA</b>	<b>RATE</b>		
Total claims	10 - 20 =	0	x \$18.00	<b>\$0.00</b>	
Independent claims	1 - 3 =	0	x \$80.00	<b>\$0.00</b>	
Multiple Dependent Claims (check if applicable). <input type="checkbox"/>				<b>\$0.00</b>	
<b>TOTAL OF ABOVE CALCULATIONS =</b>				<b>\$1,130.00</b>	
Reduction of 1/2 for filing by small entity, if applicable. Verified Small Entity Statement must also be filed (Note 37 CFR 1.9, 1.27, 1.28) (check if applicable). <input type="checkbox"/>				<b>\$0.00</b>	
<b>SUBTOTAL =</b>				<b>\$1,130.00</b>	
Processing fee of \$130.00 for furnishing the English translation later than <input type="checkbox"/> 20 <input type="checkbox"/> 30 months from the earliest claimed priority date (37 CFR 1.492 (f)).				<b>\$0.00</b>	
<b>TOTAL NATIONAL FEE =</b>				<b>\$1,130.00</b>	
Fee for recording the enclosed assignment (37 CFR 1.21(h)). The assignment must be accompanied by an appropriate cover sheet (37 CFR 3.28, 3.31) (check if applicable). <input type="checkbox"/>				<b>\$0.00</b>	
<b>TOTAL FEES ENCLOSED =</b>				<b>\$1,130.00</b>	
				<b>Amount to be: refunded</b>	<b>\$</b>
				<b>charged</b>	<b>\$</b>

- ☒ A check in the amount of **\$1,130.00** to cover the above fees is enclosed.
- ☐ Please charge my Deposit Account No. \_\_\_\_\_ in the amount of \_\_\_\_\_ to cover the above fees.  
A duplicate copy of this sheet is enclosed.
- ☒ The Commissioner is hereby authorized to charge any fees which may be required, or credit any overpayment to Deposit Account No. **19-4375** A duplicate copy of this sheet is enclosed.

**NOTE:** Where an appropriate time limit under 37 CFR 1.494 or 1.495 has not been met, a petition to revive (37 CFR 1.137(a) or (b)) must be filed and granted to restore the application to pending status.

SEND ALL CORRESPONDENCE TO:

Thomas P. Pavelko  
 STEVENS, DAVIS, MILLER & MOSHER, L.L.P.  
 1615 L Street, NW, Suite 850  
 Washington, DC 20036  
 Tel: 202/785-0100  
 Fax: 202/408-5200

SIGNATURE

Thomas P. Pavelko

NAME

31,689

REGISTRATION NUMBER

April 6, 2001

DATE

## IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the Application of

Inventors: Ola OLOFSSON et al.

Application No.: New PCT Application

Filed: April 6, 2001

For: FLOORING MATERIAL COMPRISING BOARD SHAPED  
FLOOR ELEMENTS WHICH ARE JOINED VERTICALLY BY  
MEANS OF SEPARATE ASSEMBLY PROFILES

PRELIMINARY AMENDMENT

Honorable Commissioner of  
Patents and Trademarks  
Washington, DC 20231

Sir:

Please amend the above application as follows:

IN THE CLAIMS

Please amend the claims as follows (Exhibit I is a marked-up version of the amended claims):

4. (Amended) Vertically joined flooring material according to claim 2, characterized in that the part of the floor board (1) located between each edge and its respective groove (4) is thinner than the maximum thickness of the floor board (1) by means of a recess (6) located on the lower side (5).

5. (Amended) Vertically joined flooring material according to claim 1, characterized in that, the distance between the lips

RECEIVED "T-590360"

(11) of the joining profile (10) is somewhat smaller than the distance between the grooves (4) placed on each side of and closest to the edge (2) of two adjacent floor boards (1).

6. (Amended) Vertically joined flooring material according to claim 1, characterized in that, the joining profiles (10) are manufactured in long sections which may be cut into a desired length of the joining profiles (10) exceeds the length of a floor board (1) before being cut.

7. (Amended) Vertically joined flooring material according to claim 1, characterized in that, the joining profiles (10) and/or the floor boards are partially coated with glue or adhesive tape.

8. (Amended) Vertically joined flooring material according to claim 1, characterized in that, a decorative strip (20) is intended to be assembled from above in an intentional gap formed between two floor boards (1).

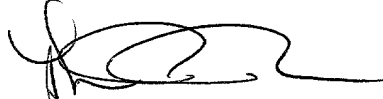
10. (Amended) Vertically joined flooring material according to claim 8, characterized in that, the decorative strip (20) is provided with shoulders (22) intended to rest against the upper edges (16) of the joining profile (10).

REMARKS

This Preliminary Amendment eliminates the multiple dependent claim status of claims 4 - 8 and 10 in order to avoid the multiple dependent claim surcharge.

Early and favorable consideration of this application is respectfully requested.

Respectfully submitted,



Thomas P. Pavelko  
Registration No. 31,689

Date: April 6, 2001

TPP/clw

ATTORNEY DOCKET NO. TPP 31386

STEVENS, DAVIS, MILLER & MOSHER, L.L.P.  
1615 L Street, NW  
Suite 850  
Washington, DC 20036  
Telephone: (202) 785-0100  
Facsimile: (202) 408-5200

EXHIBIT I - MARKED-UP VERSION OF AMENDED CLAIMS

4. (Amended) Vertically joined flooring material according to claim 2 [or 3], characterized in that the part of the floor board (1) located between each edge and its respective groove (4) is thinner than the maximum thickness of the floor board (1) by means of a recess (6) located on the lower side (5).

5. (Amended) Vertically joined flooring material according [any of the claims 1 - 4] to claim 1, characterized in that, the distance between the lips (11) of the joining profile (10) is somewhat smaller than the distance between the grooves (4) placed on each side of and closest to the edge (2) of two adjacent floor boards (1).

6. (Amended) Vertically joined flooring material according [any of the claims 1 - 5] to claim 1, characterized in that, the joining profiles (10) are manufactured in long sections which may be cut into a desired length of the joining profiles (10) exceeds the length of a floor board (1) before being cut.

7. (Amended) Vertically joined flooring material according [any of the claims 1 - 6] to claim 1, characterized in that, the

joining profiles (10) and/or the floor boards are partially coated with glue or adhesive tape.

8. (Amended) Vertically joined flooring material according [any of the claims 1 - 7] to claim 1, characterized in that, a decorative strip (20) is intended to be assembled from above in an intentional gap formed between two floor boards (1).

10. (Amended) Vertically joined flooring material according to claim 8 [or 9], characterized in that, the decorative strip (20) is provided with shoulders (22) intended to rest against the upper edges (16) of the joining profile (10).

0900644 05111  
T07050 T0690360

FLOORING MATERIAL COMPRISING BOARD SHAPED FLOOR ELEMENTS WHICH ARE JOINED VERTICALLY BY MEANS OF SEPARATE ASSEMBLY PROFILES

The present invention relates to a flooring material comprising board shaped floor elements which are joined vertically by means of separate assembly profiles.

Prefabricated floor boards which are provided with tongue and groove at the edges are well known today. As these are rather easy to install, this can be achieved by the average handy man. Such floors can be made of solid wood, particle board or fibre board. These floor boards are most often provided with a top surface, such as lacquer or some kind of laminate. The board are most often joined by being glued together via their tongue and groove. The most common types of floor boards are, however, burdened with the disadvantage to form gaps of varying width between the floor boards if the installer is not thorough enough. Dirt will accumulate in such gaps. Moisture will furthermore enter the joints which will cause the core to expand in cases where it is made of solid wood, fibre board or particle board which usually is the case. This expansion will cause the top surface to rise, closest to the joint, which radically decreases the useful life of the floor due to increased wear on the protruding edges of the floor board. In order to avoid this type of gaps it is known to use different type of tensioning devices used for forcing the floor boards together during installation. This operation is, however, rather awkward and it is desirable to achieve a floor board with a joint which is self-orienting and thereby automatically will find its correct position. It would also be possible to use such a joint without having to use glue.

One such floor is known through WO 93/13280 wherein a form of clips is intended to keep floor boards together. The floor boards are, besides being provided with traditional tongue and groove, also provided with a single longitudinal groove on the side facing downwards. The floor boards are resting on the clips why a great number of such clips will have to be used to avoid resilient movements in the floor. Such movements will cause noise. The distance between the floor boards and the surface below will also cause acoustic resonance which will give the floor a "noisy" character. This is not desirable. The disadvantage with a groove and tongue solution is foremost that the tongue will have to be milled from the board which will cause a loss of the expensive top surface. It will furthermore be possible to assemble the floor boards, oriented in one direction only. The tongue is also a delicate part which is easily damaged during transport and handling which makes assembly difficult or causes impaired fitting.

Another such floor is known through Swedish patent application No. 8202375-5 in which floor boards are provided with grooves at the opposite edges. A separate profile, in which a tongue is included, is used for guiding the boards horizontally. The lower part of the profile is also provided with girders protruding upwards.

09/80694T-052401



These girders are intended to interact with grooves on the lower side of the floor boards. A floor according to Se application No. 8202375-5 will however have to be assembled in a way that makes it necessary for the installer to stand on his knees since the floor will have to be turned into, or slid sideways, into the desired position.

It has, through the present invention been possible to solve the above mentioned problems, whereby a floor that can withstand handling, demands a minimum of milling of the decorative top surface and is easy to install has been achieved. The invention relates to floor boards which are joined vertically, with a mainly square, rectangular, rhomboidal or polygonal shape, as seen from above. The floor boards are provided with edges which are provided with a groove, a lower side and a decorative top surface. The floor boards are intended to be joined by means of separate joining profiles. The invention is characterised in that all edges are provided with one groove each, which grooves are arranged parallel to its respective edge. The joining profiles are provided with lips arranged in pairs, which lips each are intended to be received by the groove of a floor board so that adjacent floor boards with the grooves at the adjacent edges is guided and fixed horizontally by the lips of a joining profile. The lips are connected to each other by a middle section of the joining profile. The joining profile is provided with a central cheek section which is comprised by a first and a second independently resilient cheek which cheeks are provided with one tongue each. The tongues are intended to be received by one groove each so that adjacent floor boards are guided in a vertical direction.

The grooves on the lower side of the floor boards are suitably arranged on distance from the closest edge less than half, preferably less than one quarter of the width of a floor board.

The floor boards are suitably provided with a groove at the edges. The distance between each groove and the closest edge is mainly the same.

The part of the floor board located between each edge and its respective groove is preferably thinner than the maximum thickness of the floor board by means of a recess located on the lower side.

The distance between the lips of the joining profile is preferably somewhat smaller than the distance between the grooves placed on each side of and closest to the edge of two adjacent floor boards. The joining profile will hereby exercise a clamping force on the joint.

The joining profiles are suitably manufactured in long sections which suitably are manufactured through extrusion which is a well known and rational manufacturing method. The joining profiles may then be provided in different lengths or in rolls

09306941-052101  
T07250 T4690360

which may be cut into a desired length during the assembly. The length of the joining profiles suitably exceeds the length of a floor board before being cut. One advantage with such long joining profiles is that joining profiles may be installed in full-length over, for example, the width of the floor which will reduce the risk for gaps in the joints in cases where the lateral joints overlap. Such assembly where the joints between the floor boards overlap in both directions may of course be used even if the joining profile has the same length as, or is shorter than, the floor boards. The shorter side edges of the floor boards may be joined by using shorter lengths of the joining profile. The joining profiles are installed gradually as each new row of floor boards are joined with the previously installed one. The flooring material according to the present invention is very suited for being installed without any use of adhesives such as glue. It is of course possible to use adhesives to make the assembly more permanent by apply or coat parts of the joining profiles or parts of the floor board with glue or double-faced adhesive tape. The glue or tape is then suitably applied on the surfaces of the joining profiles situated between the lips as well as on the edges of the floor boards. Since the floor boards according to the present invention is provided with the same geometry along all of the edges it will become possible to turn the floor board in the desired direction. It will therefore be possible to perform patterned design installations for the layman.

According to the present invention the joining profiles constitute separate parts in opposite to the most common types of flooring materials using tongue and groove. This will be a great advantage in connection to manufacturing, transport and installation since traditional joining incorporates very delicate and sensitive parts. These parts are traditionally made of fibre board or particle board which are very easy to either brake or deform. Damaged floor boards will normally have to be rejected. Joining profiles according to the present invention may be manufactured from a number of materials and through a number of different manufacturing methods. Among suitable methods can be mentioned injection moulding and extrusion. Suitable materials are thermoplastic materials such as poly olefins, polystyrene, polyvinyl chloride or acrylnitril-butadiene-styrene-copolymer. These can be filled with for example sawdust, cellulose or lime to foremost increase the dimension stability but also to increase the adhesion when being glued.

According to an alternative embodiment of the invention a decorative strip is intended to be installed from above into an intentional gap formed between two floor boards. The decorative strip is preferably provided with heels at its lower part. The heels are intended to snap-join with depressions on the joining profile. The decorative strip is further provided with shoulders which are intended to rest against the upper edges of the joining profile.

Such a decorative strip may be used to increase the decorative effect in a floor and can be installed between every second or third floor board as well as between

0906941-052101

every floor board. The upper surface of the decorative strip may be covered with a decorative thermosetting laminate with a pattern that matches the rest of the floor. Also profiles made of metal might be used. Among other materials that might be used can be mentioned poly olefins, polystyrene, polyvinyl chloride and acrylnitril-butadiene-styrene-copolymer. These can be filled with for example sawdust, cellulose or lime to foremost increase the dimension stability but also to increase the adhesion when being glued. In cases where the decorative strip is to be provided with upper surface of thermoplastic laminate it is suitable to manufacture the decorative strip of a thermoplastic material with 15 - 60 % filler of for example cellulose powder. It is also possible to use the decorative strip as a dilatation device, i.e. to absorb temperature and moisture related expansion in the floor. The decorative strip is then suitably manufactured of a thermoplastic elastomer.

A flooring material according to the present invention is suited for installations without use of glue. It is of course possible to use glue or double-faced adhesive tape in order to make the installation completely permanent. The glue or tape is then suitably applied in, or in connection to, possible cavities in the joint before the assembly.

The floor boards according to the present invention is assembled by being pressed downwards to snap-join with previously installed floor boards. Commonly known floor boards are assembled horizontally by being forced or knocked together. Some known floor boards are assembled by being turned or prized into position. These known floor boards are guided vertically and in a few cases also horizontally on a great number of variations on the tongue-and-groove theme. It is very difficult to apply sufficient horizontal force manually at floor level whereby different types of tensioning devices are essential when installing such floors. The installer will only have to apply some of his body weight over the joint and the floor boards will snap together, when installing floors according to the present invention. It is hereby becomes possible walk the floor boards into position once they are placed correctly.

It is also possible to lay the floor standing up by using very simple tools, for example a couple of rods with a suction cup at the lower ends. It would thereby be possible to install the floor without having to crawl on ones knees. Industrial injuries such as back and knee problems are very common by floor installers. It also becomes possible to remove a floor board even though it is completely surrounded by other floor boards, provided it isn't glued. This operation is suitably achieved by using a more powerful type of suction cup to lift the floor board, one edge at the time. It is also possible to drill a hole in the floor board to be replaced in order to get a place to clutch the board. Among reasons why a single floor board needs to be changed are when a heavy object, such as a flat iron, is dropped on the floor. It has until

now been possible only for a professional floor installer to achieve a repair in these types of floors since great experience of profession and a multitude of tool are needed. Such a repair is naturally very costly. It has through the present invention been made possible for a layman to achieve such a repair without having to utilise special tools.

The invention is described further together with enclosed drawings showing different embodiments of a flooring material according to the invention whereby,

-figure 1a - 1c show in exploded view and in cross-section a first embodiment of a flooring material according to the invention, before, during and after the assembly.

-figure 2a - 2c show different embodiments of a second alternative embodiment of a flooring material according to the invention.

Figure 1a - 1c show in exploded view, schematically and in cross-section the same embodiment of a vertically joined flooring material according to the invention. The flooring material is shown before (fig. 1a), during (fig. 1b) and after (figure 1c) the assembly. The floor boards 1 are provided with edges 2 which are provided with a groove 2' a lower side 5 and a top surface. The floor boards 1 are intended to be joined by means of separate joining profiles 10. All edges 2 are provided with one groove 4 each, which grooves 4 are arranged parallel to their respective edges 2. The grooves are placed on the lower side 5 at a distance of less than one fourth of the width of the floor board 1, from the closest edge 2. The section placed between the edges 2 and the grooves 4 has a thickness which is less than the maximum floor board thickness by a recess 6 on the lower side 5 of the floor board 1. The thickness of the floor board 1 is normally between 5 and 15 mm whereby a suitable depth of the recess is 1 - 5 mm. The joining profile 10 is provided with lips 11 arranged in pairs. The lips 11 are each intended to be received by one of the grooves 4 of a floor board 1 so that adjacent floor boards 1 with the grooves at the adjacent edges 2 are guided and fixed horizontally via the lips 11 of a joining profile 10. The lips 11 are connected to each other via a middle section 12 on the joining profile 10. The floor boards 1 will hereby be forced against each other whereby gaps can be avoided. The joining profiles 10 are provided with a central cheek section 13 which is constituted by a first and a second independently resilient cheek 13' and 13" respectively. The cheeks 13' and 13" respectively, are provided with each one tongue 14' and 14" respectively. The tongues 14' and 14" respectively are intended to be received by each one groove 2' whereby adjacent floor boards 1 are guided in the vertical direction. The joining profiles 10 are manufactured in lengths exceeding the length of a floor board 1 and are cut to the desired length at the

0906941-05101

assembly. It is possible to provide the joining profiles 10 in the form of rolls. The embodiment shown in the figures 1a - c will give a minimum of machining and loss of the costly decorative upper surface 3 during manufacturing.

The floor boards 1 most often includes a core which is covered with an upper decorative surface layer 3. The core is most often constituted of saw dust, fibre or particles of wood which are bonded together with glue or resin. Since the cellulose based material in the core is sensitive to moisture, it is advantageous to coat the surface closest to the joint if the floor will be exposed to moisture. This surface treatment may include wax, resin or some kind of lacquer. It is not necessary to coat the joint when the floor boards are to be glued together since the glue itself will protect from penetration of moisture. The upper decorative surface 3 is constituted by a decorative paper impregnated with melamine-formaldehyde resin. One or more layers of so-called overlay paper made of  $\alpha$ -cellulose which are impregnated with melamine-formaldehyde resin are advantageously placed on top of the decorative paper. One or more of the layers may be sprinkled with hard particles, of for example,  $\alpha$ -aluminium oxide, silicon oxide or silicon carbide in connection to the impregnation in order to improve the abrasion resistance. The lower side 5 may be surface treated with lacquer or a surface layer of paper and resin.

Figure 2a - 2c shows schematically and in cross-section different embodiments of an alternative embodiment of a vertically joined flooring material according to the invention. The floor boards 1 are provided with edges 2 which are provided with grooves 2', a lower side 5 and an upper decorative surface 3. The floor boards 1 are intended to be joined by means of separate joining profiles 10. All edges 2 are provided with each one groove 4, which grooves 4 are arranged parallel to its respective edge 2. The grooves 4 on the lower side 5 are arranged on distance of less than one quarter, of the width of the floor board 1, from the closest edge 2. The section placed between the edges 2 and the grooves 4 has a thickness which is less than the maximum floor board thickness by a recess 6 on the lower side 5 of the floor board 1. The thickness of the floor board 1 is normally between 5 and 15 mm whereby a suitable depth of the recess is 1 - 5 mm. The joining profile 10 is provided with lips 11 arranged in pairs. The lips 11 are arranged on a greater distance from each other than as previously shown in figure 1. The lips 11 are each intended to be received by one of the grooves 4 of a floor board 1 so that adjacent floor boards 1 with the grooves 4 at the adjacent edges 2 are guided and fixed horizontally via the lips 11 of a joining profile 10. The lips 11 are connected to each other via a middle section 12 on the joining profile 10. The floor boards 1 will hereby be forced against each other whereby gaps can be avoided. The joining profiles 11 are provided with a central cheek section 13 which is constituted by a

09306941-052101

first and a second independently resilient cheek 13' and 13" respectively. The cheeks 13' and 13" respectively are placed at a greater distance from each other than as previously shown in figure 1. The cheeks 13' and 13" respectively are provided with each one tongue 14' and 14" respectively. The tongues 14' and 14" respectively are intended to be received by each one groove 2' whereby adjacent floor boards 1 are guided in the vertical direction. The joining profiles 10 are manufactured in lengths exceeding the length of a floor board 1 and are cut to the desired length during the installation. It is possible to provide the joining profiles 10 in the form of rolls. The embodiments shown in the figures 2a - c will give a minimum of machining and loss of the costly decorative upper surface 3 during manufacturing. A decorative strip 20 is assembled from above, into the gap that is formed between two floor boards 1. The decorative strip 20 is provided with heels 21 at its lower part. The heels 21 are intended to interact with depressions 15 on the joining profile 10. The decorative strip 20 is furthermore provided with shoulders 22 which are intended to interact with edges 16 on the joining profile 10.

Such a decorative strip 20 may be used to increase the decorative effect in a floor and may be installed between every other or third floor board 1 as well as between each of the boards. The upper surface of the decorative strip 20 may, for example, be covered with a decorative thermosetting laminate with a pattern that matches the surface the rest of the floor is provide with. The decorative strip is then suitably manufactured of a thermosetting resin or a thermoplastic material with 15 - 60 % filler for example in the form of saw dust.

It is also possible to use the decorative strip 20 as a dilatation device (figure 2c) in order to absorb movements in the floor caused thermal or moisture related expansion in the floor. The decorative strip is then suitably manufactured of a thermoplastic elastomer.

The invention is limited by the embodiments shown since these can be varied in different ways within the scope of the invention.

09506941-052101

## Claims

1. Vertically joined flooring material comprising floor boards (1) with a mainly square, rectangular, rhomboidal or polygonal shape, as seen from above, which floor boards (1) are provided with edges (2) which are provided with a groove (2'), a lower side (5) and a decorative top surface (3), whereby the floor boards (1) are intended to be joined by means of separate joining profiles (10),  
c h a r a c t e r i s e d in that, all edges (2) are provided with one groove (4) each, which grooves (4) are arranged parallel to its respective edge (2) and that the joining profiles (10) are provided with lips (11) arranged in pairs, which lips (11) each are intended to be received by the groove (4) of a floor board (1) so that adjacent floor boards (1) with the grooves (4) at the adjacent edges (2) is guided and fixed horizontally by the lips (11) of a joining profile (10), which lips (11) are connected to each other by a middle section (12) of the joining profile (10) and that the joining profile (10) is provided with a central cheek section (13) which is comprised by a first and a second independently resilient cheek (13' and 13" respectively) which cheeks (13' and 13" respectively) are provided with one tongue (14' and 14" respectively) each whereby the tongues (14' and 14" respectively) are intended to be received by one groove (2') each so that adjacent floor boards (1) are guided in a vertical direction.
2. Vertically joined flooring material according to claim 1, c h a r a c t e r i s e d in that the grooves (4) on the lower side (5) are arranged on distance from the closest edge (2) less than half, preferably less than one quarter of the width of a floor board (1).
3. Vertically joined flooring material according to claim 2, c h a r a c t e r i s e d in that the floor boards (1) are provided with a groove (4) at the edges (2) and that the distance between each groove (4) and the closest edge (2) is mainly the same.
4. Vertically joined flooring material according claim 2 or 3, c h a r a c t e r s i e d in that the part of the floor board (1) located between each edge and its respective groove (4) is thinner than the maximum thickness of the floor board (1) by means of a recess (6) located on the lower side (5).
5. Vertically joined flooring material according any of the claims 1 - 4,  
c h a r a c t e r i s e d in that, the distance between the lips (11) of the joining profile (10) is somewhat smaller than the distance between the grooves (4) placed on each side of and closest to the edge (2) of two adjacent floor boards (1).

T01250" T4690650

6. Vertically joined flooring material according any of the claims 1 - 5,  
c h a r a c t e r i s e d in that, the joining profiles (10) are manufactured in long sections which may be cut into a desired length and that the length of the joining profiles (10) exceeds the length of a floor board (1) before being cut.
7. Vertically joined flooring material according any of the claims 1 - 6,  
c h a r a c t e r i s e d in that, the joining profiles (10) and/or the floor boards are partially coated with glue or adhesive tape.
8. Vertically joined flooring material according any of the claims 1 - 7,  
c h a r a c t e r i s e d in that, a decorative strip (20) is intended to be assembled from above in an intentional gap formed between two floor boards (1).
9. Vertically joined flooring material according to claim 8,  
c h a r a c t e r i s e d in that, the decorative strip (20) is provided with heels (21) on its lower part intended to interact with corresponding depressions (15) on the joining profile (10).
10. Vertically joined flooring material according to claim 8 or 9,  
c h a r a c t e r i s e d in that, the decorative strip (20) is provided with shoulders (22) intended to rest against the upper edges (16) of the joining profile (10).

T0250 44030350



Fig. 1a

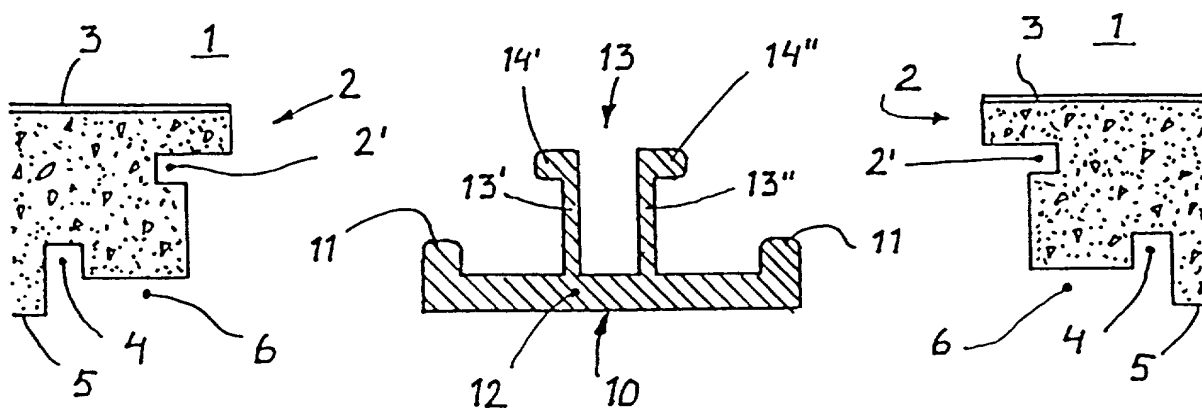
 $1/2$ 

Fig. 1b

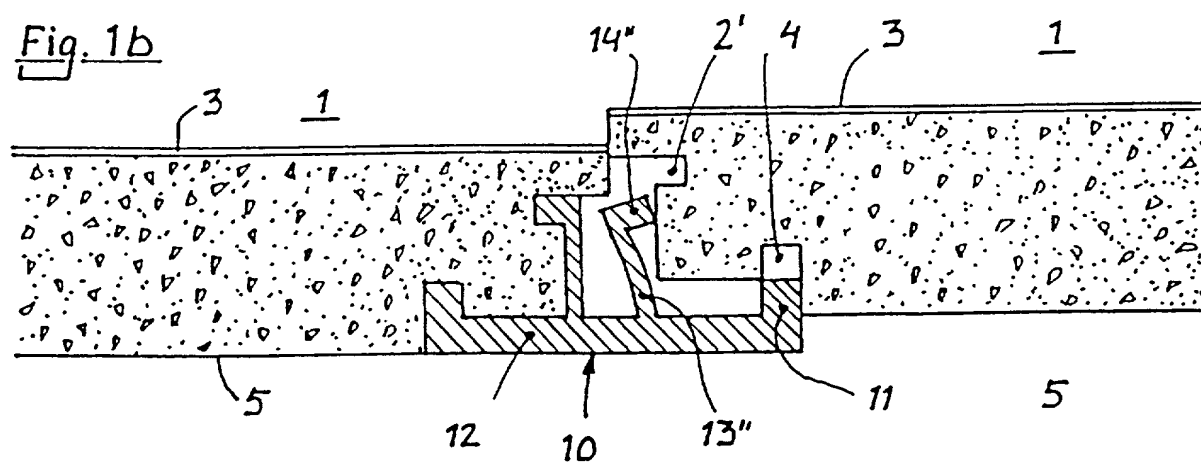


Fig. 1c

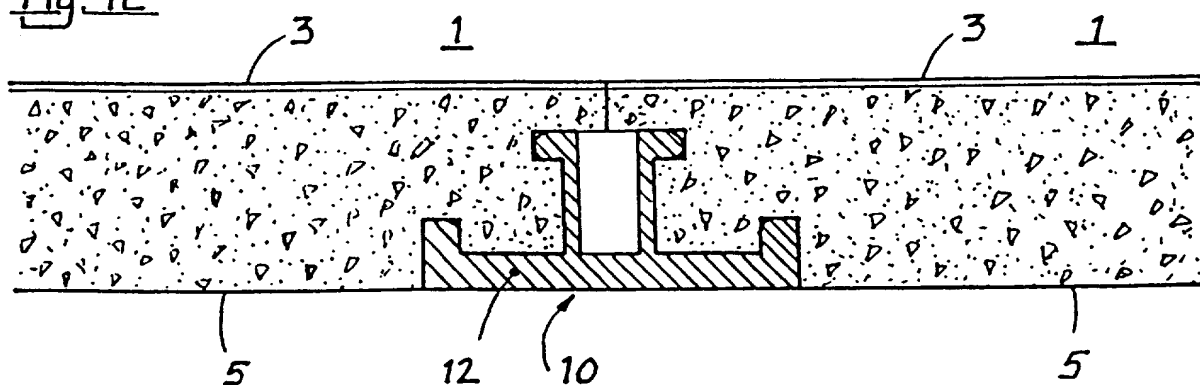
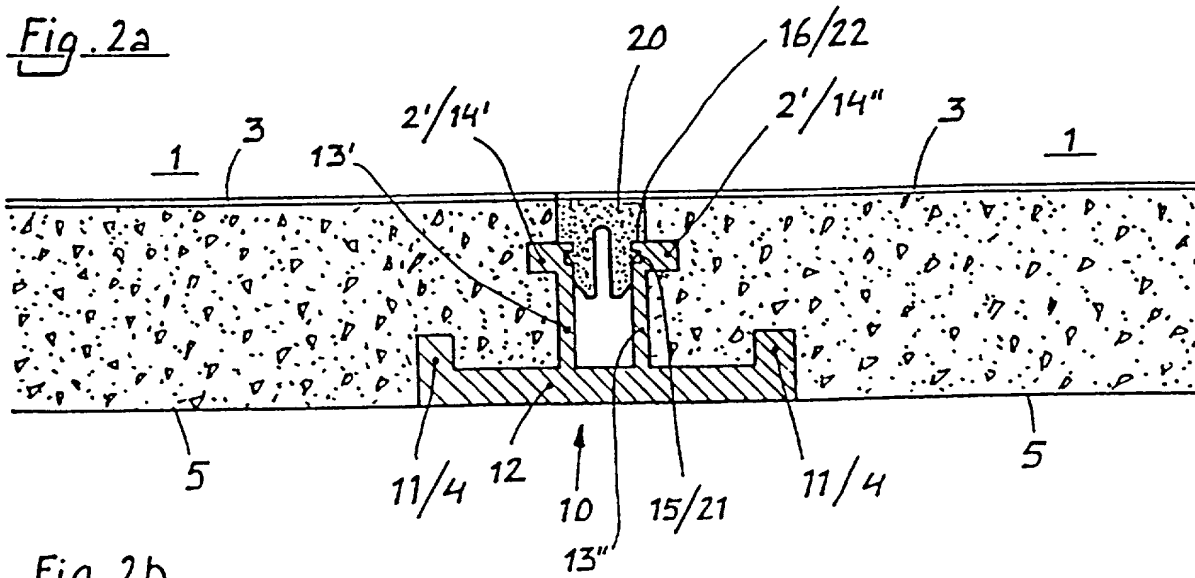
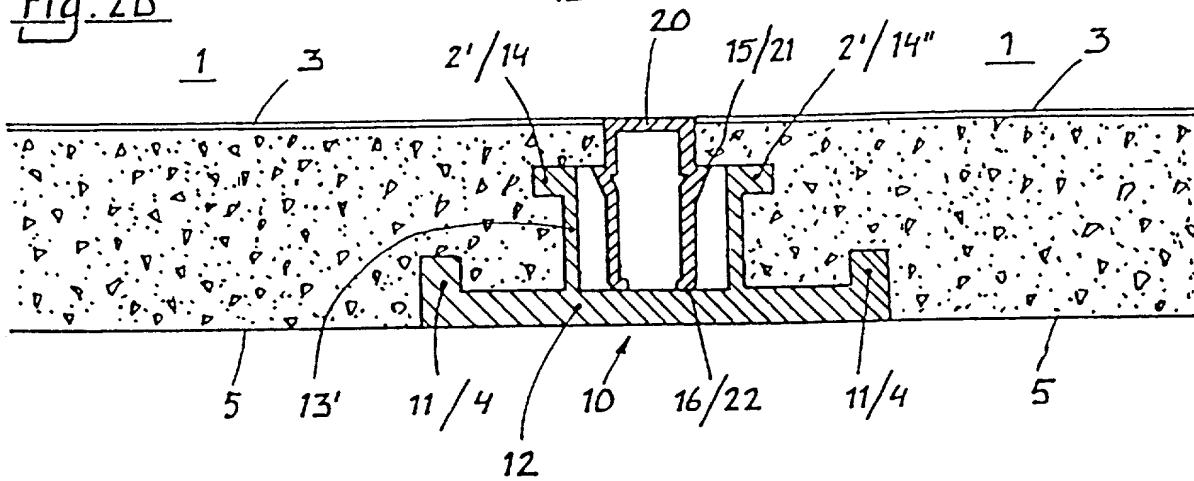
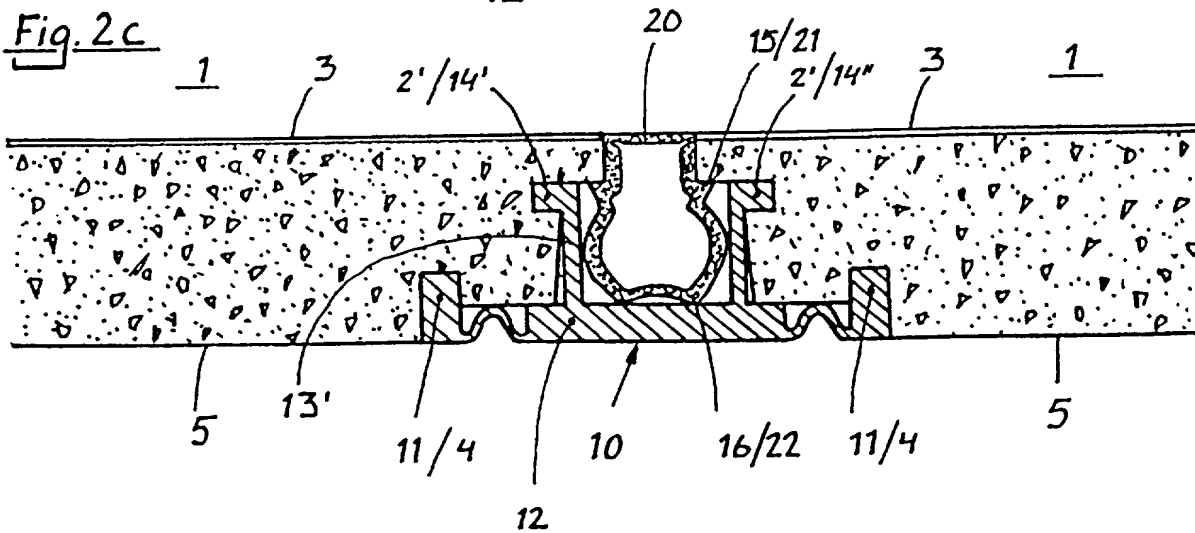


Fig. 2aFig. 2bFig. 2c

COMBINED DECLARATION AND POWER OF ATTORNEY FOR  
UTILITY PATENT APPLICATION (Includes PCT)

Attorney Docket No.  
TPP 31386

As a below named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated below next to my name;  
that

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural inventors are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled:

FLOORING MATERIAL COMPRISING BOARD SHAPED FLOOR ELEMENTS WHICH ARE JOINED VERTICALLY BY MEANS OF SEAPRATE ASSEMBLY PROFILES

the specification of which (check one)

☐ is attached hereto.

☐ was filed on \_\_\_\_\_ as Application Serial No. \_\_\_\_\_ and was amended on \_\_\_\_\_ (if applicable)

☒ was filed as PCT International Application No. PCT/SE99/01701 on 27 September 1999, and was filed in the U.S. National Stage on \_\_\_\_\_ as U.S. Patent Application No. \_\_\_\_\_

I hereby state that I have reviewed and understand the contents of the above identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose information which is material to the examination of this application in accordance with Title 37, Code of Federal Regulations, §1.56(a).

I do not know and do not believe the claimed invention was ever known or used in the United States of America before my or our invention thereof, or patented or described in any printed publication in any country before my or our invention thereof or more than one year prior to this application, that the same was not in public use or on sale in the United States of America more than one year prior to this application, that the invention has not been patented or made the subject of an inventor's certificate issued before the date of this application in any country foreign to the United States of America on an application filed by me or my legal representatives or assigns more than twelve months prior to this application.

I hereby claim foreign priority benefits under Title 35, United States Code §119 and/or §365(a)(b) of any foreign application(s) and United States provisional applications for patent or inventor's certificate listed below and have also identified below any foreign application for patent or inventor's certificate having a filing date before that of the application(s) on which priority is claimed:

Prior Foreign and U.S. Provisional Application(s)			Priority Claimed	
<u>9803379-8</u> (Number)	<u>Sweden</u> (Country)	<u>06 October 1998</u> Day/Month/Year Filed	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No
<u>9900432-7</u> (Number)	<u>Sweden</u> (Country)	<u>10 February 1999</u> Day/Month/Year Filed	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No
<u>9902883-9</u> (Number)	<u>Sweden</u> (Country)	<u>12 August 1999</u> Day/Month/Year Filed	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No

Attorney Docket No. TPP 31386

I hereby claim the benefit under Title 35, United States Code, §120 and/or §365(c) of any United States application(s) or PCT international application(s) designating the United States of America listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior application(s) in the manner provided by the first paragraph of Title 35, United States Code, §112, I acknowledge the duty to disclose material information as defined in Title 37, Code of Federal Regulations, §1.56(a) which occurred between the filing date of the prior application and the national or PCT international filing date of this application:


Application Serial No.	Filing Date	Status
		(patented, pending, abandoned)

Application Serial No.	Filing Date	Status
		(patented, pending, abandoned)

I hereby appoint the following attorney(s) and/or agent(s) to prosecute this application and to transact all business in the Patent and Trademark Office connected therewith; Stevens, Davis, Miller & Mosher, L.L.P.; Anthony P. Venturino, Reg. No. 31,674; James E. Ledbetter, Reg. No. 28,732; and Thomas P. Pavelko, Reg. No. 31,689. Direct all telephone calls to telephone no. 202-785-0100 and faxes to 202-408-5200.

Address all correspondence to 1615 L Street, N.W., Suite 850, Washington, D.C. 20036.

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true, and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Full Name of Sole, First Inventor <u>Lola OLOFSSON</u>	Inventor's Signature 	Date <u>01/04/17</u>
Residence: <u>Trelleborg, Sweden</u>	SEX <u>SEX</u>	Citizenship <u>Sweden</u>
Post Office Address: <u>Torupsgatan 23, S-231 66 Trelleborg, Sweden</u>		

2-00

Full Name of Second, Joint Inventor Göran MÅRTENSSON	Inventor's Signature <i>Göran Marten</i>	Date 01-04-20
Residence: Klagstorp, Sweden SEX		Citizenship Sweden
Post Office Address: Vallby 878, S-231 97 Klagstorp, Sweden		
Full Name of Third, Joint Inventor	Inventor's Signature	Date
Residence:		Citizenship
Post Office Address:		

0906941-05101  
T0250-4690860